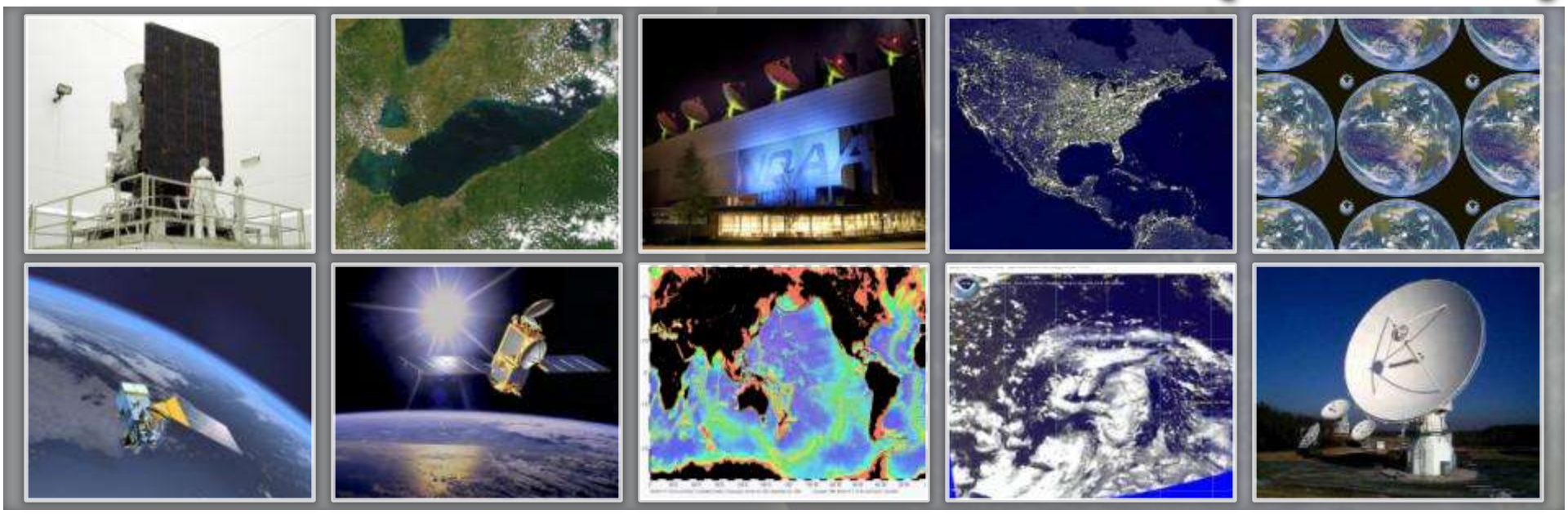
National Environmental Satellite, Data, and Information Service (NESDIS)



The Nation's Operational Environmental Satellite Agency

NOAA Satellite and Information Service Organizational Chart

HEADQUARTERS

Stephen Volz
Assistant Administrator for
Satellite & Information Services

Mark S. Paese
Deputy Assistant Administrator for
Satellite & Information Services

Thomas Burns
Deputy Assistant Administrator, Systems

Cherish Johnson
Chief Financial Officer/
Chief Administrative Officer

Kelly Turner
Chief of Staff

Mark S. Paese (Acting)
Chief Information Officer

Vanessa Griffin (Acting)
Office of System Architecture
& Advanced Planning

D. Brent Smith
International &
Interagency Affairs Office

Mark S. Paese (Acting)
Office of Space
Commercialization

SATELLITE OPERATIONS & ACQUISITIONS

Steven Petersen
Office of Satellite
Ground Services

Vanessa Griffin
Office of Satellite and
Product Operations

Al Powell
Center for Satellite
Applications and Research

Gregory Mandt
GOES-R
Program Office

Harry Cikanek
Joint Polar Satellite System
(JPSS) Program Office

Suzanne Hilding
Office of Projects,
Planning & Analysis

ENVIRONMENTAL DATA & INFORMATION

Thomas R. Karl
National Center for
Environmental Information

Revised: 1/26/2015

NESDIS Mission

Our mission is to deliver accurate, timely, and reliable satellite observations and integrated products and to provide long-term stewardship for global environmental data in support of the NOAA mission.

NESDIS Mission Supports NOAA's Mission and Goals

NOAA/NESDIS data products and services underpin and support NOAA's mission of Science, Service and Stewardship

Climate Adaptation and Mitigation

- Long-term climate record
- Sea-level rise
- Sea surface temperature

Weather Ready Nation

- Continuous surveillance for severe weather
- Primary input for numerical prediction models
- Real-time images/products

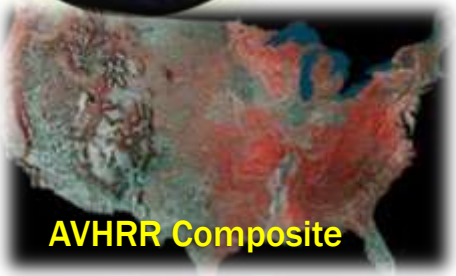
Healthy Oceans

- Coral reef bleaching alerts
- Harmful algal bloom detection
- Migratory tracking

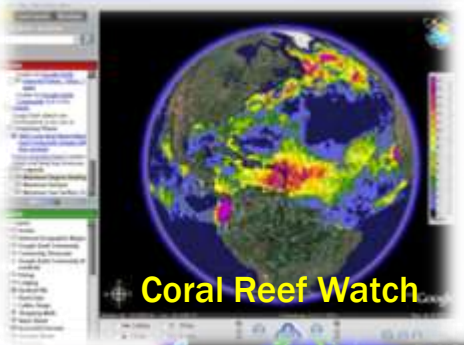
Resilient Coastal Communities and Economies

- Oil spill monitoring and analysis
- Hydrologic monitoring
- Arctic sea ice analysis

Supporting NOAA's Mission


AVHRR Composite

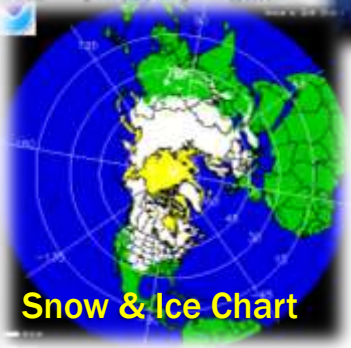

DART Tsunami Buoy


Coral Reef Watch

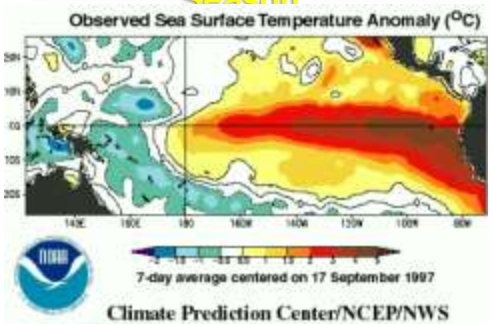

Search & Rescue Stream gage


Montage of 2010 Hurricane Season


Satellite-tagged Dolphin

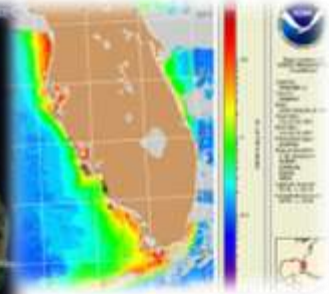

Snow & Ice Chart

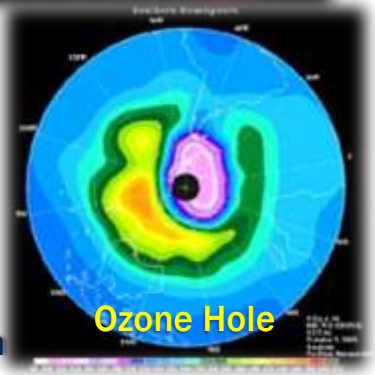

GOES SXI image



El Nino signature


Deepwater Horizon


Harmful Algal Bloom


Ozone Hole

Department of Commerce's Primary Mission Essential Functions

Collect and provide the Nation with intelligence data, imagery, and other essential information for predictive environmental and atmospheric modeling systems and space-based distress alert systems by operating NOAA-controlled satellites, communications equipment, and associated systems

Provide the Nation with environmental forecasts, warnings, data, and expertise critical to public safety, disaster preparedness, all-hazards response and recovery, the national transportation system, safe navigation, and the protection of the Nation's critical infrastructure and natural resources

Supporting the Nation's Priorities

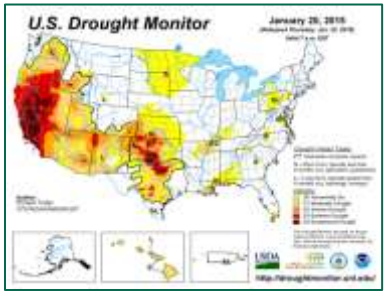
Environmental Intelligence:
NOAA Products and Services Support To the Public's Decision-making

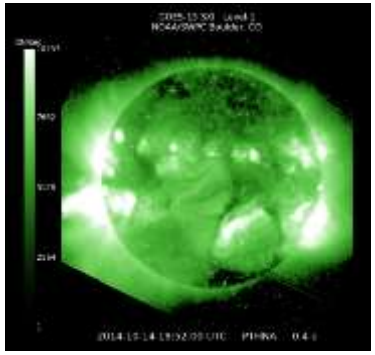
Environmental decisions can impact lives, property and segments of the economy for years.

Environmental intelligence includes weather warnings or forecasts, tsunami and flood alerts, space weather, fire and drought reports and predictions, ice monitoring or harmful algal bloom assessments.

Critical information is tied to observations, modeling and computer resources.

Decision support tools are essential to effectively convey information.





An End-to-End Responsibility

Requirements & Planning

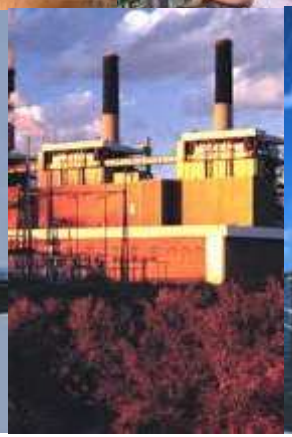
System Acquisition

Launch

Command & Control

Real-Time Product Development & Distribution

Data Archive & Access

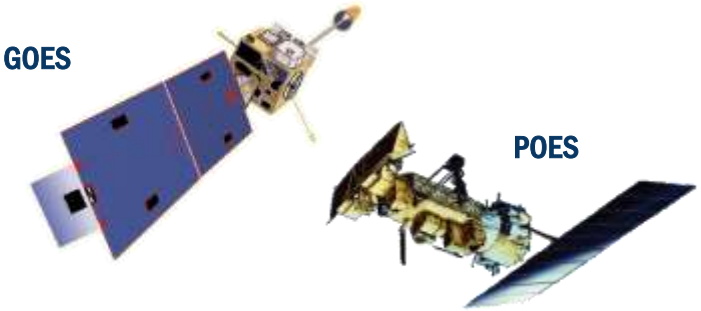


Products & Services

NESDIS Principal Activities

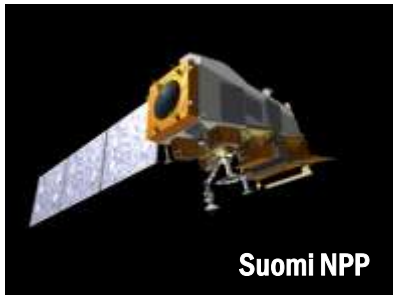
Providing On-Orbit Satellite Operations

- Geostationary satellites (GOES)
- Polar-orbiting satellites (POES; Suomi NPP)
- Defense Meteorological Satellite Program (DMSP)
  - DMSP is operated by NOAA for the U.S. Air Force
- Jason-2 altimetry satellite



Acquiring Next Generation Satellites

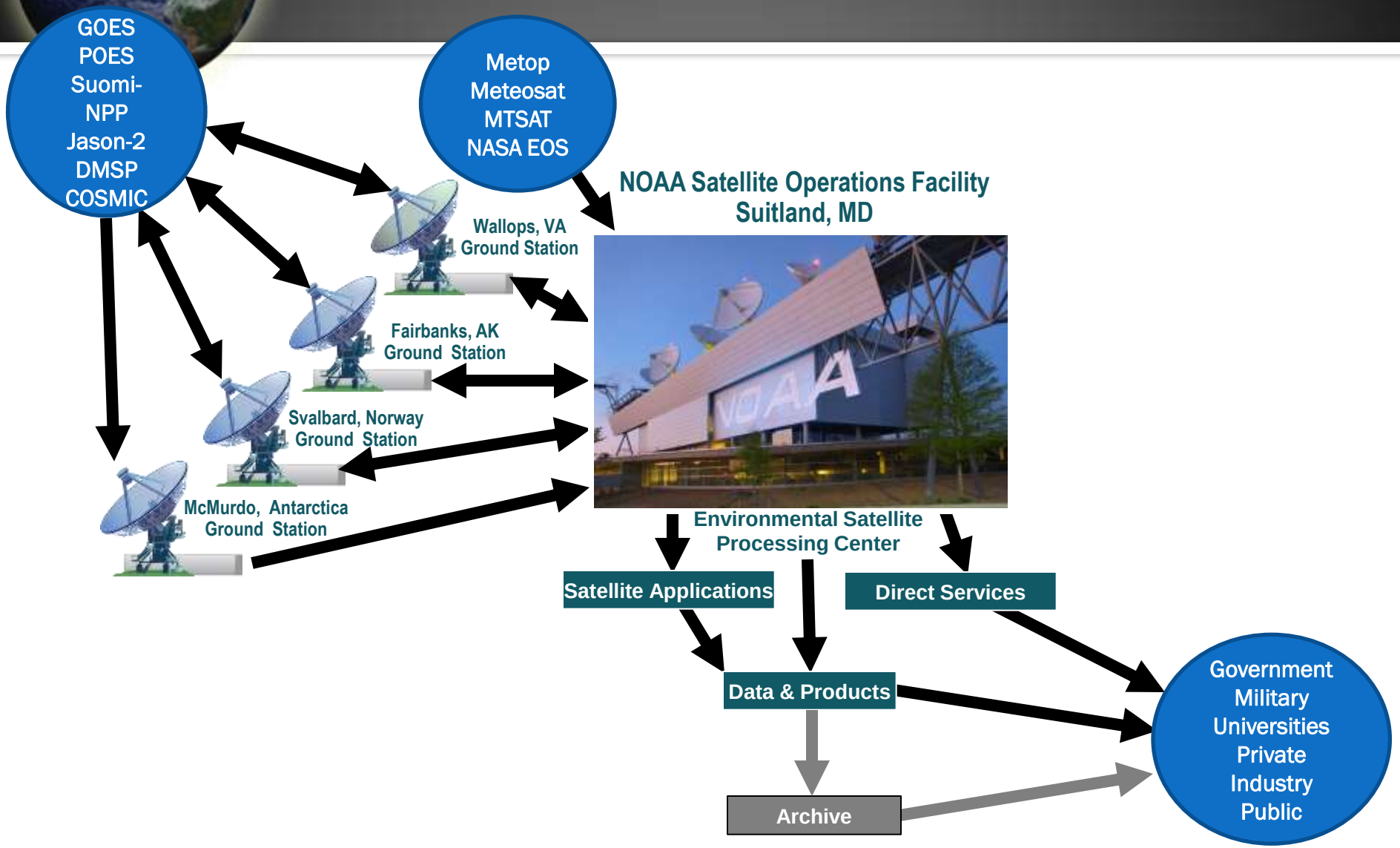
- GOES–R Satellite Series
- Joint Polar Satellite System (JPSS)
- DSCOVR (Solar Wind Continuity)
- Jason-3 Altimetry Satellite
- COSMIC-2 Radio Occultation



Providing Long Term Data Stewardship

- National Environmental Information Office
  - National Climatic Data Center
  - National Oceanographic Data Center
  - National Geophysical Data Center

Satellite Information Flow



NOAA Satellite Operations

24 hours a day, 7 days a week,

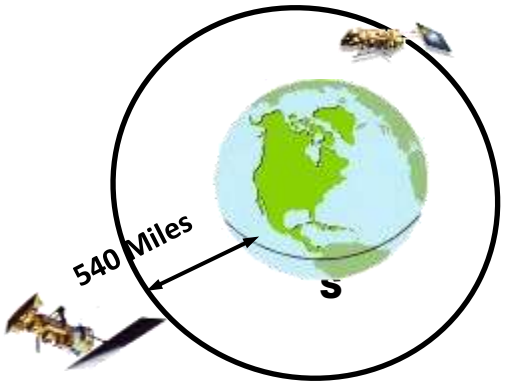
365 days a year

Functions include:

- Orbit Determination
- Spacecraft Navigation
- Data Acquisition
- Product Development and Distribution
- NOAA supports over 17 satellites daily
- Satellite-assisted Search and Rescue
- National Ice Center
- Product Processing and Distribution

Three Observation Points

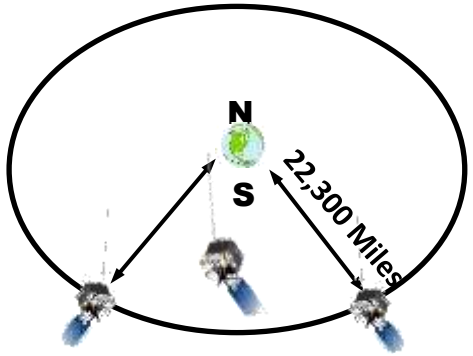
Polar-orbiting Operational Environmental Satellites



Each satellite covers the Earth twice per day

- Pole-to-pole orbit is 102 minutes and views each location at the same time of day
- Global coverage every 12 hours with one satellite
- EUMETSAT in the mid-morning orbit; NOAA in the early afternoon orbit

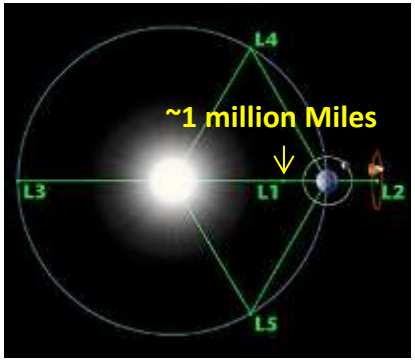
Geostationary Operational Environmental Satellites



Continuous monitoring of the Americas

- Same geographic image over time
- Full image every 30 minutes and Northern Hemisphere images every 15 minutes
- Usable images between 60ºN and 60ºS

Deep Space at Lagrange 1 Point



Continuous monitors the surface of the Sun

- Uninterrupted view of the sun
- Located ~1 million miles from Earth, at the Lagrange Point 1 position of the Sun-Earth system

JPSS Overview

Benefits

- Ensures continuity of global weather observations and critical environmental data around the world
- Delivers real-time data to the National Weather Service, improving the quality of forecasts and enabling improved consistency in public warnings 3 to 7 days in advance of a severe weather event
- Provides critical monitoring for hurricanes, droughts, floods, snowstorms and other severe weather events, allowing for the time to protect lives and property through evacuations and other preparations
- Advances weather, climate, environmental and oceanographic science through technological improvements in satellite instruments and capabilities over legacy NOAA satellites

Launch Commitment Dates	No later than 2Q FY 2017 (JPSS-1)*; 1Q FY 2022 (JPSS-2)
Program Architecture	3 Satellites (Suomi NPP, JPSS-1, JPSS-2) Suomi NPP – 5 year operational design life; JPSS-1 – 7 year operational design life
Program Operational Life	FY 2012 - FY 2025
Program Life-cycle (FY 2015 President's Budget)	$11.323 billion

*Launch Date based on FY 2015 President's Budget Request

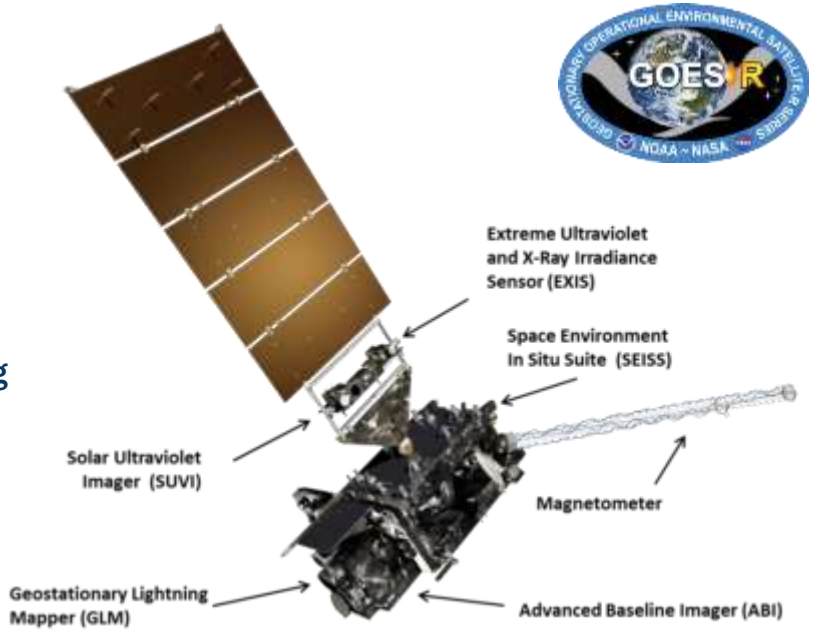
JPSS-1 Instruments

JPSS-1 Instruments		Measurements
	**ATMS** - Advanced Technology Microwave Sounder	ATMS and CrIS together provide high vertical resolution temperature and water vapor information needed to maintain and improve forecast skill out to 7 days in advance for extreme weather events, including hurricanes and severe weather outbreaks
	**CrIS** - Cross-track Infrared Sounder	
	**VIIRS** – Visible Infrared Imaging Radiometer Suite	VIIRS provides many critical imagery products including snow/ice cover, clouds, fog, aerosols, fire, smoke plumes, vegetation health, phytoplankton abundance/chlorophyll
	**OMPS** - Ozone Mapping and Profiler Suite Nadir	Ozone spectrometers for monitoring ozone hole and recovery of stratospheric ozone and for UV index forecasts
	**CERES** - Clouds and the Earth's Radiant Energy System	Scanning radiometer which supports studies of Earth Radiation Budget (ERB)

GOES-R Series Overview

Benefits

- Maintains continuity of weather observations and critical environmental data from geostationary orbit
- Provides faster scanning of entire hemisphere while simultaneously observing individual storms, improving hurricane tracking, aviation flight route planning, air quality warnings and fire detection
- Provides a new lightning mapping capability for improved warning lead time for severe storms and tornadoes, allowing time to protect lives and property
- Provides improved warning of solar events to minimize impact to communications, navigation systems, power grids and satellites in orbit



GOES-R Launch Commitment Date*	2Q FY 2016
Program Architecture	4 Satellites (GOES-R, S, T & U) 10 year operational design life for each spacecraft
Program Operational Life	FY 2017 – FY 2036
Program Life-cycle	$10.829 billion

*Launch Commitment Date based on FY 2015 President's Budget Request

GOES-R Instruments

Terrestrial Weather

Advanced Baseline Imager (ABI)

Geostationary Lightning Mapper (GLM)

- ✓ Key for "nowcasting" out to 3 days
- ✓ Improves hurricane track & intensity forecasts
- ✓ Increases thunderstorm & tornado warning lead time
- ✓ Improves aviation flight route planning
- ✓ Data for long-term climate variability studies

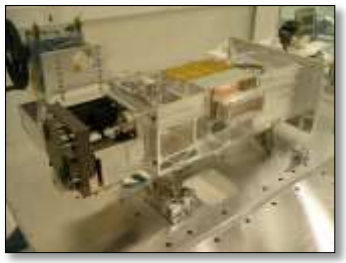
Solar Weather

Space Environment In-Situ Suite (SEISS)

Solar Ultra-Violet Imager (SUVI)

Magnetometer

Extreme UV/X-Ray Irradiance Sensors (EXIS)



- ✓ Improves solar flare warnings for communications and navigation disruptions
- ✓ More accurate monitoring of energetic particles responsible for radiation hazards to humans and spacecraft
- ✓ Better monitoring of Coronal Mass Ejections to improve geomagnetic storm forecasting

Partnered Missions

Future Missions	Legacy System
2Q FY 2015 • **Deep Space Climate Observatory (DSCOVR),** a joint NOAA, NASA, US Air Force mission	NASA Advanced Composition Explorer (ACE), launched in 1997
2Q FY 2015 • **Jason-3**, a joint US (NOAA and NASA) and European (EUMETSAT and CNES) mission	Jason-2, launched in 2008
FY 2016 • **First, 6 COSMIC-2 satellites**, a joint US (NOAA, NASA, US Air Force) and Taiwan mission	COSMIC-1, launched in 2006
2Q FY 2016 • **GOES-R**, NOAA with NASA as the acquisition agent	GOES-P, launched in 2010
2Q FY 2017 • **JPSS-1**, NOAA with NASA as the acquisition agent	Suomi NPP, launched in 2011; NOAA-19, launched in 2009
1Q FY 2019 • **Metop-C**, a joint NOAA and EUMETSAT mission, with NASA acquisition support	Metop-B, launched in 2012

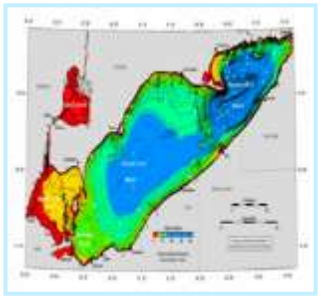
TBD
• **SIDAR** , a joint NOAA, NASA, EUMETSAT, French Space Agency, Canadian Department of Defence mission
  • TSIS-1
  • ARGOS-DCS, SARSAT
	SORCE, launched in 2003; TCTE, launched in 2013
	NOAA-19, launched in 2009

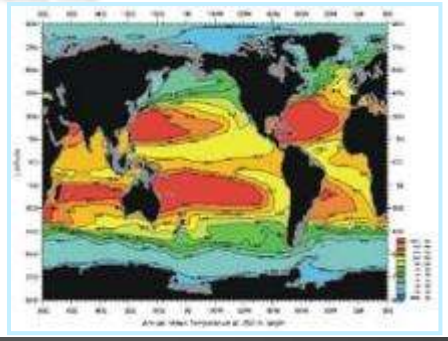
Data Centers & Information Services:

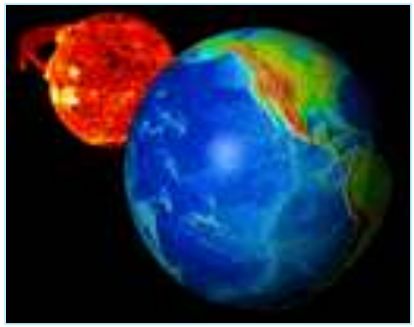
Archive, Access and Assessment

- NOAA's National Environmental Information Office provide long-term preservation, management, data stewardship and ready accessibility to the world's largest source of oceanographic, geophysical, solar-terrestrial and climatic data
- NESDIS operates NOAA's Central and Regional library system to support NOAA's scientific/technical personnel.
- More than weather, NESDIS is the loci for integration of data from various sources to address complex environmental challenges, e.g., Gulf of Mexico "dead zone," long-term polar ice trends, drought monitoring.

- Over 10 Petabytes of data in NOAA's National Data Centers
- Over 4.1 PBs of data served in FY 2012, over 50 % annual growth rate







Current Challenges

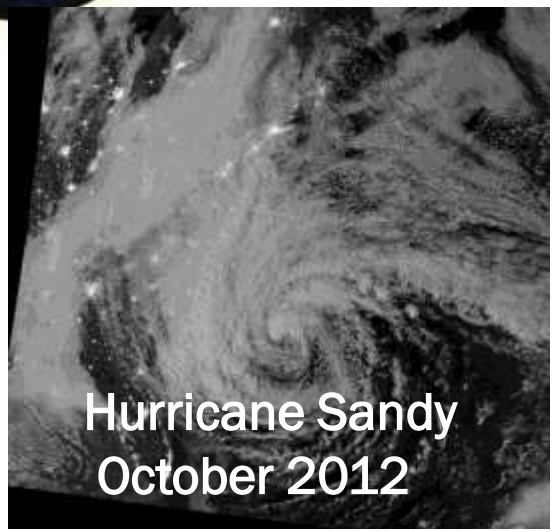
- Continuity of critical observations for current weather forecasting needs until future systems come on-line
- Maintaining brisk pace as we develop the next generation systems
- Being responsive to stakeholder pressure to make our systems and processes more cost-effective
- Maintaining an adequate cybersecurity posture without impeding full and open access our data and information services.

Summary

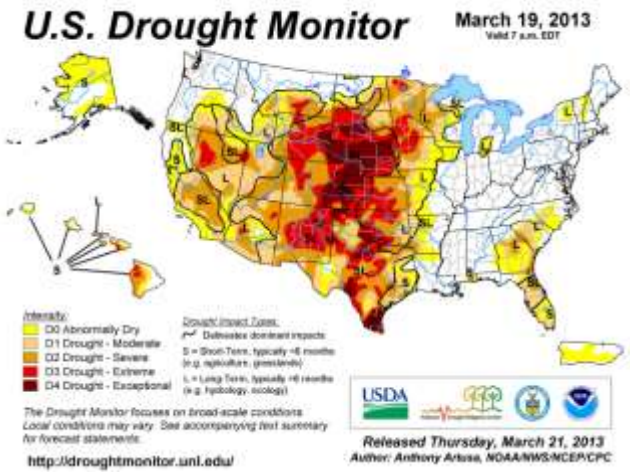
- NESDIS' mission is to deliver accurate, timely, and reliable satellite observations and integrated products and to provide long-term stewardship for global environmental data in support of the NOAA mission
- Next generation systems offer significant advantages over the legacy on-orbit systems, and they remain on schedule and within budget as they progress towards launch
- The NESDIS satellite enterprise benefits from strong partnerships, both domestically and internationally
- The President's FY 2015 Budget request preserves NESDIS' core functions, focuses on key mission areas, and provides strategic investments for new activities

Back Up Slides

Weather-Ready Nation

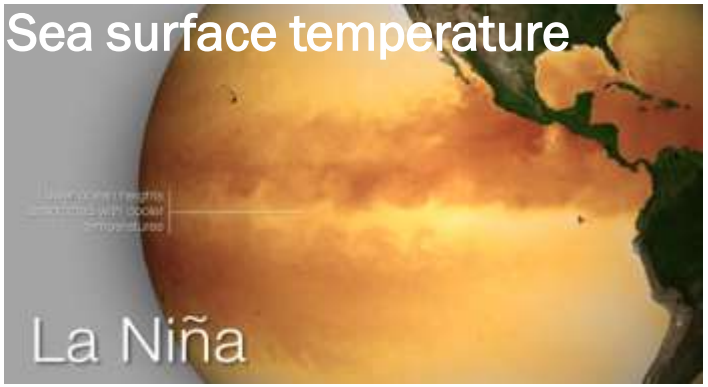


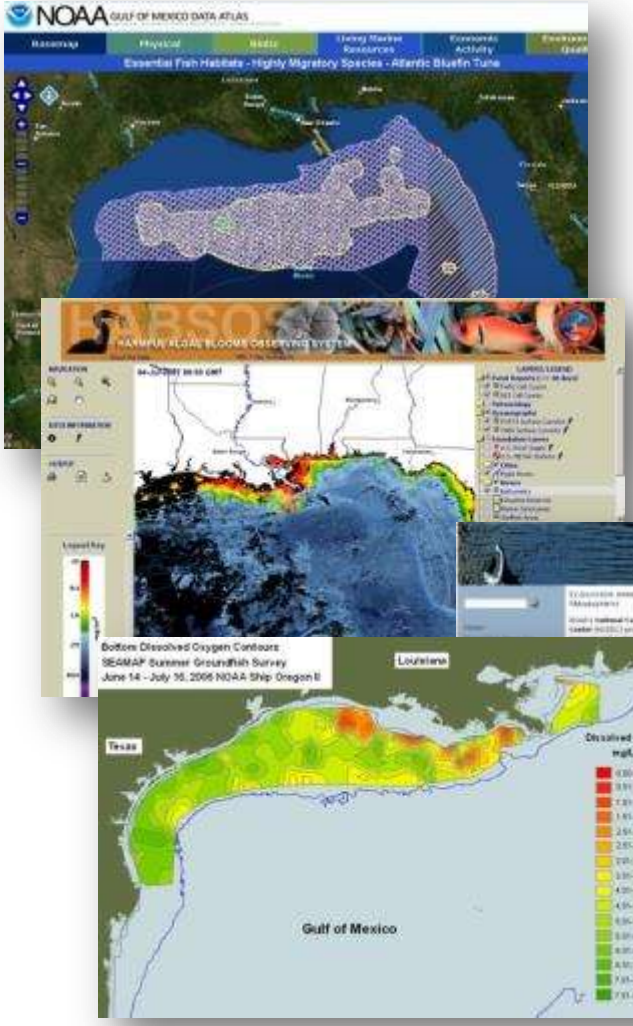
Snowmageddon 2011



2008 Flooding of Cedar Rapids, Iowa

Resilient Coastal Communities and Economies

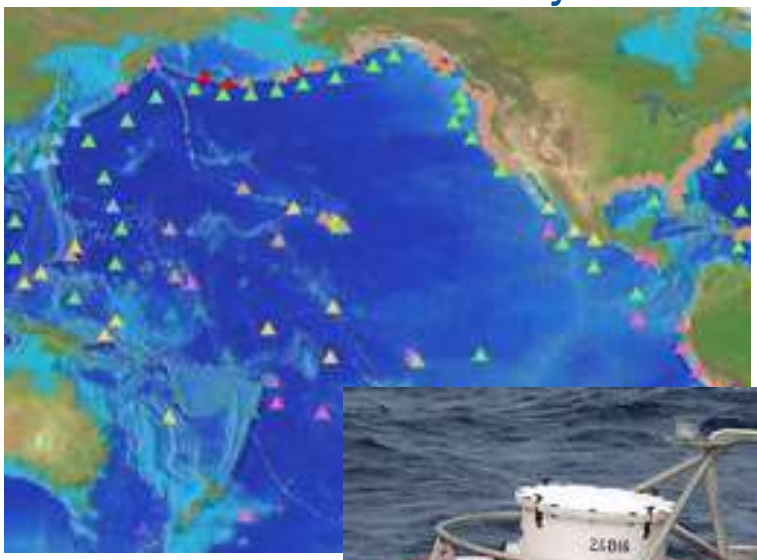




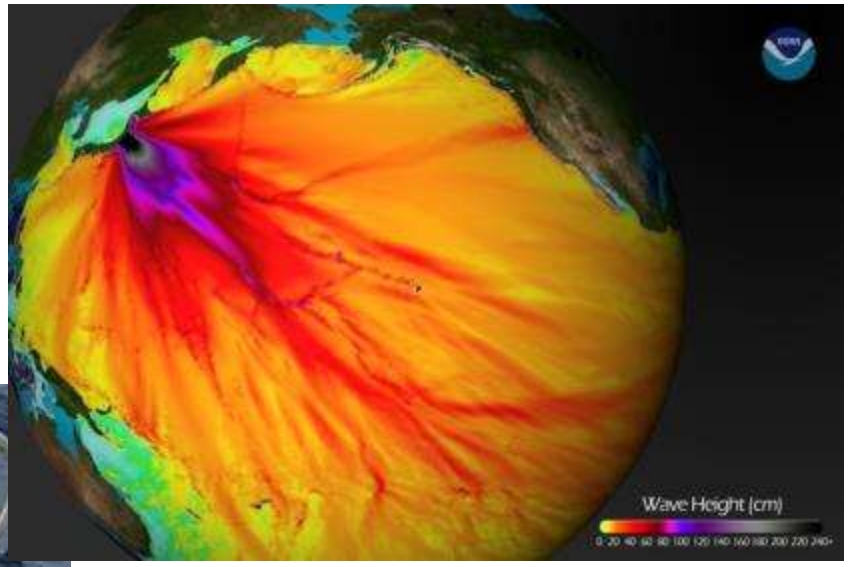
Ecosystems Data Management

Healthy Oceans

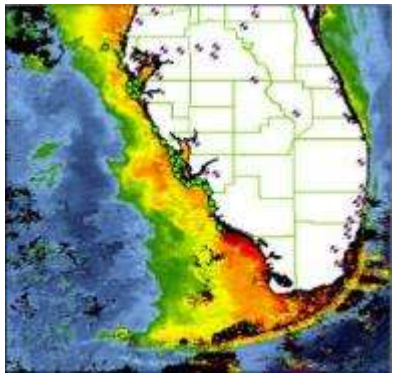
NOAA National Data Buoy Center



March 11, 2011 – Tsunami Wave Height Model



Harmful Algal Blooms



JPSS Program Locations

Backup Command and Data Acquisition Station
NOAA Fairbanks Satellite Operations Facility
Fairbanks, AK

The Cloud and Earth Radiant Energy System (CERES)
Northrop Grumman Aerospace Corp.
Azusa, CA

Advanced Technology Microwave Sounder (ATMS)
Northrop Grumman Electronic Systems
Azusa, CA & Linthicum, MD

Visible Infrared Imager Radiometer Suite (VIIRS)
Raytheon
El Segundo, CA

Launch Site
Vandenberg Air Force Base, Lompoc, CA

JPSS-1 Launch Vehicle contractor
United Launch Services
Englewood, CO

Ozone Mapping and Profiler Suite (OMPS)
Ball Aerospace
Boulder, CO & Azusa, CA

Ground System
Raytheon
Aurora, CO

Cross-track Infrared Sounder (CrIS)
Exelis
Fort Wayne, IN

JPSS-1 spacecraft contractor
Ball Aerospace
Boulder, CO

JPSS Remote Back up
NOAA
Fairmont, WV

Longterm Archive and Access
NOAA, National Climatic Data Center
Asheville, NC

JPSS Program Management
NOAA with NASA support
Greenbelt, MD

JPSS Command and Control @ NSOF
NOAA
Suitland, MD

Government presence

Contractors

GOES-R Series Program Locations

GOES-R & -S Launch Vehicle contractor
United Launch Services
Englewood, CO

Advanced Baseline Imager (ABI) contractor
Exelis
Ft. Wayne, IN & Rochester, NY

Space Environmental In-Situ Suite (SEISS) contractor
Assurance Technology Corp.
Carlisle, MA

Geostationary Lightning Mapper (GLM) contractor
Lockheed Martin Advanced Tech Corp.
Palo Alto, CA

Spacecraft bus & Magnetometer contractor
Lockheed Martin Space Systems
Newtown, PA
Denver, CO
Greenbelt, MD
Stennis Space Center, MS

Extreme Ultra Violet / X Ray Irradiance Sensor (EXIS)
Laboratory for Atmospheric and Space Physics
Boulder, CO

GOES-R Program Management
NOAA with NASA support
Greenbelt, MD

Solar Ultra Violet Imager (SUVI) contractor
Lockheed Martin Advanced Tech Corp.
Palo Alto, CA

GOES-R Command and Control @ NSOF
NOAA
Suitland, MD

Command and Data Acquisition Station
NOAA
Wallops, VA

Antenna contractor
Harris Corp.
Melbourne, FL
Richardson, TX
Omaha, NE

Core Ground segment
Harris Corp.
Melbourne, FL
Greenbelt, MD
Omaha, NE
Lexington, MA
Springfield, VA
Denver, CO

Launch Site
Cape Canaveral Air Force Station
Cape Canaveral, FL

Government presence

Contractors